CLAIMS

What is claimed is:

1. A method of modulating STAT3 mediated signaling in a cell, comprising:
contacting the cell with a STAT inhibitor, wherein said inhibitor comprises a protein having at least about 80% identity with the amino acid sequence of SEQ ID NO: 1, and wherein said protein decreases the level of STAT3.

2. The method according to Claim 1 wherein said protein comprises the amino acid sequence of SEQ ID NO: 1.

3. The method according to Claim 1, wherein said protein comprises a fusion protein.

4. The method according to Claim 1 wherein said protein comprises a peptide fragment of SEQ ID NO: 1.

5. The method according to Claim 1, wherein said protein is expressed from a nucleic acid encoding said protein, wherein said nucleic acid comprises a nucleic acid sequence having at least about 80% identity to the nucleic acid sequence of SEQ ID NO: 2.

6. The method according to Claim 5, wherein said nucleic acid comprises the nucleic acid sequence of SEQ ID NO:2.

7. The method according to Claim 6, wherein said nucleic acid is part of a viral vector.

8. The method according to Claim 7, wherein said viral vector comprises a lentiviral vector.

9. The method according to Claim 1, wherein said contacting is *in vitro*.

10. The method according to Claim 1, wherein said contacting is *in vivo*.

11. The method according to Claim 1, wherein said cell is a tumor cell.

12. The method according to Claim 1, wherein said cell is a lymphocyte.

13. The method according to Claim 12, wherein said lymphocyte is a T-cell.

14. The method according to Claim 1, wherein the cell interacts with a cytokine capable of activating STAT3.

15. The method according to Claim 14, wherein said cytokine is growth hormone, IL6, IL10, or G-CSF..

16. A method for inhibiting growth of a tumor cell, comprising:

contacting the tumor cell with a composition comprising a protein having at least about 80% identity with the amino acid sequence of SEQ ID NO: 1, wherein said protein has STAT inhibiting activity.

17. The method according to Claim 16, wherein said protein comprises the amino acid sequence of SEQ ID NO: 1.

18. The method according to Claim 16, wherein said protein comprises a fusion protein.

19. The method according to Claim 17, wherein said protein comprises a peptide fragment of SEQ ID NO: 1.

20. The method according to Claim 16, wherein said protein is expressed from a nucleic acid encoding said protein, wherein said nucleic acid comprises a nucleic acid sequence having at least about 80% identity with the nucleic acid sequence of SEQ ID NO: 2.

21. The method according to Claim 20, wherein said nucleic acid comprises the nucleic acid sequence of SEQ ID NO: 2.

22. The method according to Claim 21, wherein said nucleic acid is part of a viral vector.

23. The method according to Claim 22, wherein said viral vector is a lentiviral vector.

24. The method according to Claim 16, wherein said contacting is *in vitro*.

25. The method according to Claim 16, wherein said contacting is *in vivo*.

26. The method according to Claim 16, wherein said STAT inhibiting activity is for STAT1 or STAT3, or variants thereof.

27. The method according to Claim 16, wherein said tumor cell is associated with elevated STAT3 activity.

28. The method according to Claim 27, wherein said tumor cell is multiple myeloma, leukemia; lymphomas, cutaneous T-cell lymphoma, Hodgkin's disease; and solid tumors.

29. The method according to Claim 16, wherein said protein is used in combination with a chemotherapeutic agent.

30. A method for inhibiting an inflammatory reaction, comprising:

administering to a subject an effective amount of a composition comprising a protein having at least about 80% identity to the amino acid sequence of SEQ ID NO: 1 in an amount sufficient to inhibit said inflammatory reaction, wherein said protein has STAT inhibiting activity.

31. The method according to Claim 30, wherein said protein comprises the amino acid sequence of SEQ ID NO: 1

32. The method according to Claim 30, wherein said protein comprises a fusion protein.

33. The method according to Claim 30 wherein said protein comprises a peptide fragment of SEQ ID NO:1.

34. The method according to Claim 30, wherein said protein is expressed from a nucleic acid encoding said protein, wherein said nucleic acid comprises a nucleic acid sequence having at least about 80% identity to the nucleic acid sequence of SEQ ID NO:2.

35. The method according to Claim 34, wherein said nucleic acid comprises the nucleic acid sequence of SEQ ID NO:2.

36. The method according to Claim 30, wherein said STAT inhibiting activity is for STAT1 or STAT3, or variants thereof.

37. The method according to Claim 30, wherein said inflammatory reaction is associated with elevated STAT3 activity.

38. The method according to Claim 37, wherein said inflammatory reaction is associated with Crohn's disease, inflammatory bowel disease, multiple sclerosis, ischemia, stroke, traumatic brain injury, spinal injury, rheumatoid arthritis, and atherosclerosis.

39. A method for treating an autoimmune disease, comprising:

administering to a subject an effective amount of a composition comprising a protein having at least about 80% identity with the amino acid sequence of SEQ ID NO:1, wherein said protein has STAT inhibiting activity.

40. The method according to Claim 39, wherein said protein comprises the amino acid sequence of SEQ ID NO:1.

41. The method according to Claim 39, wherein said protein comprises a fusion protein.

42. The method according to Claim 39 wherein said protein comprises a peptide fragment of SEQ ID NO:1.

43. The method according to Claim 39, wherein said protein is expressed from a nucleic acid encoding said protein, wherein said nucleic acid has a nucleic acid sequence of at least about 80% identity to the nucleic acid sequence of SEQ ID NO:2.

44. The method according to Claim 43, said nucleic acid comprises SEQ ID NO:1.

45. The method according to Claim 39, wherein said STAT inhibiting activity is that of STAT1 or STAT3, or variants thereof.

46. The method according to Claim 39, wherein said autoimmune disease is associated with elevated levels of STAT3 activity.

47. The method according to Claim 46, wherein said autoimmune disease is insulin dependent diabetes mellitus, systemic lupus erythremetosus, or psoriasis.